Claims

1. A method of making a viral particle having a modified cell binding activity comprising:

(i) providing a viral packaging cell containing viral nucleic acid encoding a viral particle having a first cell binding activity;

(ii) the viral packaging cell also containing nucleic acid encoding a passenger peptide binding moiety;

(iii) expressing the viral nucleic acid and nucleic acid encoding the passenger peptide binding moiety so that a viral particle buds from a packaging cell membrane and the passenger peptide binding moiety is provided at a cell membrane such that the passenger peptide binding moiety is incorporated into the viral particle to modify its first cell binding activity.

2. A method as claimed in Claim 1 wherein the peptide binding moiety is provided at the outer plasma membrane of the cell.

3. A method as claimed in Claims 1 or 2 wherein the viral particle is derived from a retroviral vector.

4. A method as claimed in any preceding claim wherein the passenger peptide binding moiety is a cell growth factor.

5. The method as claimed in Claim 4 wherein the growth factor is membrane – bound stem cell factor.

6. A method as claimed in Claims 1, 2 or 3 wherein the passenger peptide binding moiety is an antibody, or an antigen binding fragment thereof.

7. A method as claimed in Claims 1, 2 or 3 wherein the peptide binding moiety recognises a target cell – specific surface antigen.

8. A method as claimed in Claims 1, 2 or 3 wherein the peptide binding moiety is at least part of a member of a binding pair comprising a target – cell specific cell – surface receptor and its ligand.

9. A method as claimed in any preceding claim wherein the viral packaging cell line comprises additional nucleic acid which can be expressed to provide a bioactive agent which is active in or on a target cell.

10. A method as claimed in Claim 9 wherein the bioactive agent is of use in the prevention and/or treatment and/or diagnosis of a disease or disorder.

11. A method as claimed in Claim 9 wherein the bioactive agent has a direct or indirect cytotoxic function.

12. A method as claimed in Claim 11 wherein the bioactive agent is any one of ricin; tumour necrosis factor; interleukin-2; interferon-gamma; ribonuclease; deoxyribonuclease; Pseudomonas exotoxin A; and caspase.

13. A method as claimed in Claim 9 wherein the bioactive agent is an enzyme capable of converting a relatively non – toxic pro – drug into a cytotoxic drug.

14. A method as claimed in Claim 13 wherein the bioactive agent is either cytosine deaminase or thymidine kinase.

15. A method as claimed in any preceding claim wherein the modified cell binding activity allows the viral peptide to bind to a target cell.

16. A method as claimed in Claim 15 wherein the target cell is a mammalian cell.

17. A method as claimed in Claim 15 wherein the target cell is a human cell.

18. A method as claimed in Claim 15 wherein target cell is a quiescent cell.

19. A method as claimed in Claim 15 wherein target cell is a human haematopoietic stem cell.

20. A method as claimed in Claim 15 wherein the target cell is a cancer cell.

21. A method as claimed in Claim 15 wherein the target cell is a mammalian T – cell.

22. A viral particle having a modified cell binding activity obtainable by a method as claimed in any preceding claim, the modified cell binding activity being conferred by a peptide other than a chimaeric viral envelope polypeptide.

23. A viral particle having a modified cell binding activity obtained by a method as claimed in any preceding claim.

24. A method of preparing an enriched population of a target cell type from a larger population of cells wherein: (1) viral particles of any one of the preceding claims, having a modified binding activity for target cells, are exposed to a population of cells comprising the target cell type to permit binding to the viral particles; (2) viral particles bound to target cells are then separated from the population of cells; (3) optionally, the viral particles are subsequently removed from the target cells.

25. A method of enriching the titre of viral particles incorporating a passenger peptide binding moiety from a population of viral particles obtainable by a method as claimed in any preceding claim comprising:

i) providing a support to which the passenger peptide binding moiety binds; and,

ii) exposing the population of viral particles to the support; and, optionally,

iii) isolating the viral particles which bind to the support from the viral particles which do not bind to the support.

26. A preparation of viral particles obtainable by a method as claimed in any preceding claim enriched for viral particles incorporating a passenger peptide binding moiety, the preparation having a titre of the viral particles of at least $10^5$ ifu/ml.

27. The preparation as claimed in claim 26 further comprising a pharmaceutically acceptable excipient and/or carrier.

28. Use of a viral particle of any one of the preceding claims, or a preparation of viral particles as claimed in Claim 26 or 27, in medicine.

29. Use of a viral particle according to any of the preceding claims, or a preparation of viral particles as claimed in Claim 26 or 27, in the manufacture of a medicament for the diagnosis and/or prevention and/or treatment of a disease or a disorder.

30. Use of a viral particle according to any of the preceding claims, or a preparation of viral particles as claimed in Claim 26 or 27, in the manufacture of a medicament for the prevention and/or treatment of arthritis.

31. The use of claim 30 wherein the virus particle incorporates a binding molecule which binds to CD5 as a passenger peptide binding moiety.

32. The use of claim 30 wherein the viral particle incorporates membrane – bound stem cell factor as a passenger peptide binding moiety.

33. Use of a viral particle according to any of the preceding claims, or a preparation of viral particles as claimed in Claim 26 or 27, in the manufacture of a medicament for the diagnosis, and/or prevention and/or treatment of cancer.

34. The use of claim 33 wherein the cancer is ovarian cancer.

35. The use of claim 33 or 34 wherein the viral particle incorporates membrane – bound stem cell factor as a passenger peptide binding moiety.

36. The use of any of claims 33 to 35 wherein the viral particle includes a gene encoding a OPCML polypeptide.

37. Use of a viral particle according to any of the preceding claims, or a preparation of viral particles as claimed in Claim 26 or 27, in gene transfer.

38. Use of a viral particle as defined in relation to any of claims 33 to 36, or a preparation of viral particles as claimed in Claim 26 or 27, in the manufacture of a medicament for treating a mammal having a defective gene, wherein nucleic acid encoding a bioactive agent for diagnosing, and/or preventing and/or treating a disease or disorder is inserted into the genome of a population of cells in vivo by implantation into bone marrow or by infusion into a blood.

39. Use of the viral particles according to any of the preceding claims, or a preparation of viral particles as claimed in Claim 26 or 27, in the manufacture of a vaccine.

40. Use of the viral particles according to any of the preceding claims, or a preparation of viral particles as claimed in Claim 26 or 27, in the manufacture of a preparation for use to present antigenic peptides to mammalian T – cells.

41. A pharmaceutical composition comprising a viral particle according to any one of claims 10 to 23, or a preparation of viral particles as claimed in Claim 26 or 27, and a pharmacutically acceptable carrier.

42. Any novel subject matter disclosed herein.